Memorandum

U.S. Department of Transportation
Federal Aviation Administration

Subject:	**INFORMATION: Parts Manufacturer Approval (PMA) Engineering Design Approval Basis - Identicality versus Test and Computation for Engine and Propeller Parts**	Date:	10/7/98
From:	**Manager, Engine and Propeller Standards Staff - ANE-110**	Reply to Attn. of:	110 Karen Grant, ANE-110: (781) 238-7119 or karen.m.grant@faa.gov
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INTRODUCTION

The intent of this guidance is to ensure that application of the methods, identicality and test and computation, used to determine PMA part design approval, are correct and consistent.

BACKGROUND

In an effort to achieve a standardized approach to the approval methods and process for engine and propeller PMAs, this office conducted a sampling of several PMA packages from various Aircraft Certification Offices (ACOs). During evaluation of those packages an inconsistency in the application of identicality and was found.

This survey showed that some ACOs are requesting Applicants who apply under the method of identicality to reapply under the method of test and computation in order to support additional testing requested by the ACO. Further examination of the compliance methods presented for the testing and computations showed that ACOs are not consistently addressing the applicable airworthiness requirements for the product upon which the PMA part is to be installed on. In addition, review of some of the data packages showed that changing the approval method for the PMA was unnecessary and in conflict with the requirements of Federal Aviation Regulation 21.303 and PMA Order 8110.42, which allow the FAA to request additional tests and analyses in support of a finding of identicality.

DISCUSSION

In accordance with paragraph 7. of Order 8110.42, there are two basic ways that a PMA Applicant may show that their part design meets compliance to the applicable airworthiness standards:

1. the Applicant shows that the design of their part is identical to the design of a part covered under a type certificate; or

2. the Applicant shows through tests and computations that the design of their part meets the airworthiness requirements applicable to the product on which the part is installed.

For aircraft engine parts the applicable airworthiness requirements are defined in either 14 CFR part 33 (part 33) or the Civil Aeronautics Manual (CAM) 13. For propellers, the applicable requirements are defined in 14 CFR part (part 35) or CAM 14.

Identicality

When an Applicant requests PMA on the basis of identicality the ACO may determine that additional tests or analyses are required to demonstrate that the airworthiness of the part is not altered by the manufacturing process, inspection and test procedures as performed by the Applicant. These additional tests and analyses found necessary to make a finding of identicality and to grant design approval, do not change the basis of the PMA approval from identicality to test and computation. If the results of these additional tests and analyses are such that the ACO finds that the produced PMA part is not identical to the type certified part, the ACO must reject the PMA application. The Applicant may then elect to reapply for PMA on the basis of test and computation.

Test and Computation

When an Applicant can not show identicality to the type certified part, or has reverse engineered all or part of that part, or incorporated design changes into their part, the basis of approval is test and computation. In accordance with 14 CFR 21.303(c)(4), “test reports and computations necessary to show that the design of the part meets the airworthiness requirements for the Federal Aviation Regulation applicable to the product

on which the part is to be installed, ..." Paragraph 8.d.(1) of Order 8110.42 restates that "Applications based upon test and computation must demonstrate compliance with the applicable airworthiness standards." Compliance to these standards must be based on similarity analyses, and/or tests. Simple identicality statements cannot be used as a method of compliance to any part 33, CAM 13, part 35 or CAM 14 requirement.

CONCLUSION

In summary,

- The are two basic ways that a PMA Applicant can show that their part design meets compliance to the applicable airworthiness requirements, identicality or test and computation.

- The FAA may require additional tests or analyses to make a finding of identicality, nevertheless the basis of the PMA approval remains identicality until the FAA determines otherwise.

- When an Applicant applies for PMA on the basis of test and computation, a compliance plan addressing all the regulations of the applicable amendment level of part 33, CAM 13, part 35 or CAM 14 must be submitted. For further information, questions or comments please contact Karen Grant, ANE-110.

Original signed by:
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